

ENVIRONMENTAL MANAGEMENT FOR HOTELS

THE INDUSTRY GUIDE TO SUSTAINABLE OPERATION

9 REFURBISHMENT AND LANDSCAPING

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This manual was published in 2014 when Sustainable Hospitality Alliance was known as International Tourism Partnership (ITP), part of Business in the Community (BITC).



In the EU alone, new buildings and refurbishment account for 40 per cent of energy requirements, up to one fifth of which could be saved



REFURBISHMENT AND LANDSCAPING

Most hotels have rolling programmes involving redecoration, changing lighting and services or, more radically, refurbishing whole floors and upgrading major items of plant. Often systems are replaced on a like-for-like basis, but refurbishment presents an excellent opportunity to increase energy-efficiency as well as introduce other environmental improvements.

When choosing materials, products and equipment, environmental criteria should be given equal consideration alongside issues such as appearance and performance. The cost of choosing an energy-efficient or environmentally preferable option is often marginal, while the benefits of doing so will accrue over many years.

9.1 PLANNING AND DESIGN

In the EU alone, the buildings sector accounts for 40 per cent of energy requirements and offers the greatest potential for savings. Research shows that more than one-fifth of present energy consumption and up to 30–45 million tonnes of CO₂ per year could be saved by 2010 by applying more ambitious standards to new buildings and during refurbishment.^[1] The **EU Directive on the Energy Performance of Buildings**, in force since January 2003, is an important piece of legislation which is helping to enhance the energy performance of public, commercial and private buildings in EU member states. Meanwhile, in the United States, more energy efficient commercial buildings are being delivered through mechanisms such as the **US Green Building Council's Leadership in Energy and Environmental Design (LEED) Green Building Rating System** and the **US EPA's Energy Star for Buildings and Manufacturing Plants**.

In addition to saving energy, there are many opportunities to save water and reduce waste, both during construction and operation, so long as refurbishment, extension and landscaping projects are properly planned from the outset.

Starwood will require all its new **Element** brand hotels to pursue the **US Green Building Council's LEED** Certification standard



Resource-saving and other environmental improvements are more likely to be achieved if you use environmentally-conscious designers and contractors who have their own environmental management systems in place. Find out about projects they have completed from professional institutes or trade associations. Exercise judgement where design fees for building services plant are based on a percentage of the cost of the plant – it may encourage over-design and result in over-sized plant operating at below its optimum efficiency.

[1] Source: European Commission. See http://ec.europa.eu/energy/demand/legislation/buildings_en.htm#Directive



You will need to inform all those involved in design and construction that environmental best practice and energy efficiency are integral to your design requirements. This includes:

- design architects
- design and building contractors
- building services engineers
- engineering, plumbing and services contractors
- lighting engineers
- interior designers.

Key steps for commissioning a more sustainable refurbishment project are shown below in **FIGURE 9.1**.

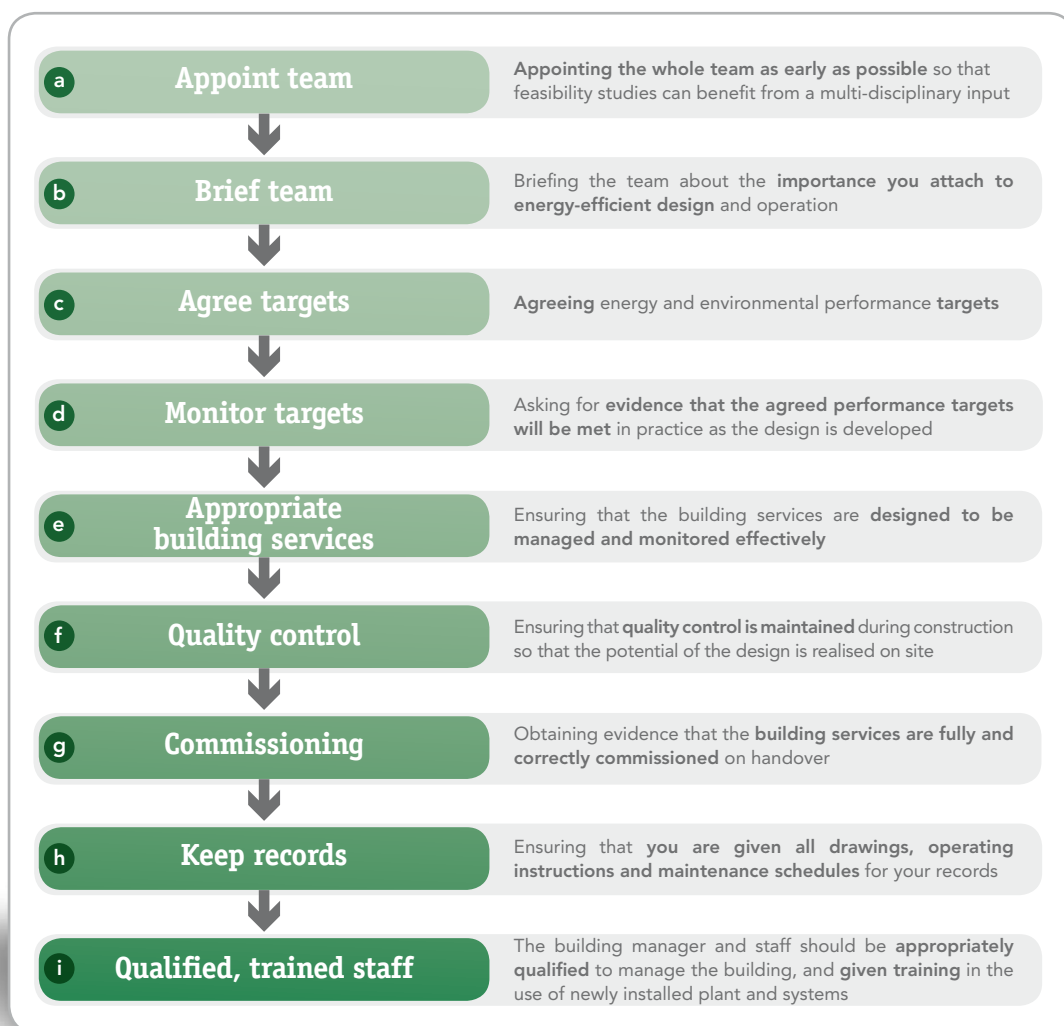


FIGURE 9.1

Key steps for commissioning a more sustainable refurbishment programme



9.2 BUILDING MATERIALS AND PRODUCTS

- a Because they often require large quantities of a variety of materials and create waste, refurbishment programmes should take into account the origin and environmental impact of materials **SEE ALSO SECTION 7. Environmentally benign materials and building products** should be specified wherever possible and every step taken to avoid wasting new materials brought on to the site.

Building materials and products incorporated into the refurbishment all have to be extracted, transported for processing and/or manufacture and brought to the site. All these actions have environmental life cycle impacts, particularly in terms of their embodied energy. When choosing building products, try to select those that offer the best ratio between high performance in use and low embodied energy. Although the exact energy needed to produce building products and materials is very difficult to determine, there are now various tools available on the internet through which you can evaluate the embodied carbon of various materials, for example the **UK Environment Agency's Carbon Calculator** and the **University of Bath's Inventory of Carbon and Energy (ICE)** which are referenced in **9.9.2**.

- b During the **demolition** phase, unwanted materials should be kept separate from one another rather than mixed together. Keeping them sorted will facilitate re-use and/or recycling and reduce the quantity of unsuitable construction waste that has to be disposed of in landfill at the end of the project.

Under new regulations in England effected in April 2008, builders and developers now have to produce **Site Waste Management Plans (SWMPs)** for construction projects costing over GBP300,000, setting out how building materials and other waste products will be removed from the site. The plans have to be written during the design phase of the project and updated throughout construction.

- c **Components and fittings** should be carefully removed and **salvaged** for re-use:
- **metal** – particularly lead, copper and brass – should be sorted and sold to scrap metal merchants
 - **glass** may be broken into cullet for recycling
 - large sections and smaller pieces of **wood** can be re-used
 - **bricks and roof tiles** can often be cleaned for re-use
 - **steel** reinforcing may be removed from concrete and sent for reprocessing
 - **masonry** may be crushed and removed, so that it can be used as a base material for roads.
- d Bear in mind that:
- selecting materials from **local sources** will reduce transport requirements
 - selecting materials which require the **minimum of processing** will help to minimise environmental impact
 - items such as **reclaimed bricks, roof tiles, paving stones, setts and cobbles** can, in appropriate circumstances, add to the visual character of a refurbishment whilst reducing its environmental impact



- some products, such as **insulation**, can be made from **recycled or natural materials** such as newspaper or sheep's wool, and if they are locally sourced, will have low transportation impacts
- using **natural products**, such as stone countertops, slate floors, timber from sustainable forests and cotton or wool fabrics, can reduce the need for products made using chemicals
- try to **avoid specifying** and using materials which contribute to harmful **indoor or external air emissions** [SEE SECTION 5](#). For example, use natural wood instead of compressed particle board, medium density fibreboard (MDF) and plywood
- use **non-toxic sealants** and **water-based paints and varnishes** in place of substances that contain volatile organic compounds (VOCs).

9.3 INSULATION AND WINDOWS

- a In cold and temperate climates, **simple attic roof insulation** above existing ceilings typically has a payback of two or three years.
- b Other **improvements to the building fabric** (such as double glazing, wall insulation or floor insulation) are likely to have a payback of ten years or more. Being disruptive, they are less easily justified on energy-saving grounds alone and are best undertaken during major refurbishment. For example, if single-glazed windows are being replaced, the opportunity should be taken to upgrade to double glazing. As well as reducing heat losses, this can improve comfort and cut condensation, while also lowering noise penetration from outside. The additional cost of double glazing is marginal compared with replacing like-for-like. Other similar improvements to the building fabric should also be considered.

9.4 ENERGY EFFICIENCY ENHANCEMENTS

You should aim to **conserve energy** while ensuring the comfort and convenience of guests and staff. Potential improvements include:

- a More energy-efficient lighting.
- b Better controls, including building automation systems.
- c Efficient building services.
- d Energy monitoring systems.
- e Raising the thermal performance of the building fabric.
- f Designs must take into account how systems will be commissioned, managed and operated.
- g Comprehensive operating and maintenance instructions must be provided at the handover. [SEE SECTION 2](#)



9.5 WATER CONSERVATION AND QUALITY

SEE SECTION 3

9.6 AIR-CONDITIONING AND REFRIGERATION SYSTEMS

SEE SECTION 2 AND SECTION 5

9.7 FURNITURE, FIXTURES AND FITTINGS

SEE SECTION 7 APPENDIX 1

9.8 EXTERNAL GROUNDS

9.8.1 Planning

- a A well-planned landscape, including the hotel's grounds, gardens and car park, can provide a **useful and valuable amenity** which can help to attract guests and ensure that their arrival is a pleasant experience. It can also provide simple leisure facilities for guests, such as paths for walking or jogging, without their needing to leave the hotel grounds. It may also create the opportunity to grow vegetables, fruit and herbs for use in the kitchen and cut flowers for public rooms.
- b Existing grounds should be **assessed for their potential**. Established features like mature trees, hedges and meadows cannot easily be replaced and should be retained if possible. Every effort should be made to preserve mature trees. If a tree must be removed, at least one new tree should be planted for every one cut down. If this cannot be on the site of the hotel, it may be possible to do so in a nearby park or amenity area.

9.8.2 Using landscape architects

- a Landscape architects should be able to use their skill and artistry to ensure that your grounds become a **worthwhile resource** rather than an expensive maintenance problem.
- b They should not only be able to provide a landscape scheme to meet your requirements, but also specify **plants that will thrive with minimum attention** in the local climatic and soil conditions.



- c The specification should take into account **future growth**, both above and below ground, together with seasonal issues such as problems arising from falling leaves.
- d A **maintenance schedule** for the gardener or gardening contractor should be provided.
- e Landscape architects should be chosen for their **experience and qualifications**, and **evidence of their capabilities** sought from colleagues, professional institutes or trade associations.



Artisans from the local community built the **Six Senses Earth Spa** in Hua Hin, Thailand. Traditional building materials and methods, with modern facilities, were used throughout

9.8.3 Planting

- a Careful attention to planting can, when integrated into a building design project, help to provide natural protection from the elements. Trees and shrubs can, for example, be used to **shield the building** from prevailing winds or provide shade from excessive sunlight.
- b **Natural hedgerows** are environmentally preferable to fencing in almost all cases as they provide a habitat and source of food for birds and other wildlife. Once established, they need **little maintenance** to keep them tidy, and they provide protection from intruders.
- c **Native species** of trees, shrubs and wild flowers which are well adapted to local climatic and soil conditions generally fare better than imported ones, and support much more wildlife. When planting, **small groups of trees** are preferable to widely-spaced individual specimens. Heights should be graded down from taller trees in the centre surrounded by shrubs and, where appropriate, a strip of long grass around the edge. Mixed species of native trees should be chosen to mimic how they would grow naturally.
- d **Grass lawns** require constant attention and **are best limited** to the areas immediately adjacent to the building or bordering pathways. Ornamental gardens are expensive to plant and need to be tended regularly so should be kept to a minimum where possible.
- e **Plants and shrubs** should be chosen to give **year-round** colour and interest. Other areas can benefit from being '**naturally landscaped**' with indigenous and wild flowers chosen for their colour and fragrance.
- f **Choose plants giving careful thought to their water requirements** and install automatic irrigation systems. These will drip-feed water only as it is needed by measuring the soil humidity and detecting rainfall. Preferably, irrigation should take place at night so that less water is lost in evaporation.
- g For hotels in city centre locations and without extensive grounds, **imaginative planting** of troughs, window boxes and hanging baskets can be effective. Many hotels find space on the roof to grow **herbs for culinary use**.



9.8.4 Pest and weed control

SEE SECTION 8.6

9.8.5 Water features and irrigation

- a** Ponds, pools, lakes, streams, waterfalls and **fountains** – whether internal or external – can be attractive both visually and aurally, providing relaxation and distraction for guests. Planning such features should, however, take into account the **safety of children**, who are likely to be attracted to them. External water features may lure **wildlife**, and the implications – both positive and negative – of doing so should also be considered.
- b** Ponds may need a **deep area to maintain water and oxygen levels** in dry periods, and should be kept away from trees and shrubs.
- c** Water '**harvested**' from **roofs** can be stored and used for irrigation purposes. With appropriate treatment, 'grey water' from showers, baths and hand basins can be re-used for irrigation or flushing WCs.
- d** **Natural reed beds** can be used for purification. With appropriate purification and treatment, water can be recycled on site several times. Such approaches can help to reduce the costs of both buying in water and its disposal, particularly in areas where water is scarce and therefore expensive.

SEE ALSO SECTION 3.3.6

9.9 MORE INFORMATION

9.9.1 Contacts

- 1. **Building Research Establishment (BRE)**
www.bre.co.uk
- 2. **Centre for Alternative Technology (CAT)**
www.cat.org.uk
- 3. **Energy Saving Trust**
www.energysavingtrust.org.uk
- 4. **University of Bath Sustainable Energy Research Team (SERT)**
www.bath.ac.uk/mech-eng/sert/index.html
- 5. **US Green Building Council**
www.usgbc.org

9.9.2 Resources

- 1. **Build Carbon Neutral**
<http://buildcarbonneutral.org>
- 2. **Energy Performance in Buildings Directive**
http://ec.europa.eu/energy/efficiency/buildings/buildings_en.htm
- 3. **Environment Agency Carbon Calculator**
www.gov.uk/government/publications/carbon-calculator-for-construction-projects
- 4. **Energy Performance of Buildings Directive (EPBD) – Buildings Platform**
www.buildup.eu
- 5. **Guidelines for Sustainable Hotel Siting, Design and Construction, available via:**
www.greenhotelier.org
- 6. **Inventory of Carbon and Energy (ICE)**
<http://perigordvacance.typepad.com/files/inventoryofcarbonandenergy.pdf>
- 7. **US Green Building Council – Leadership in Energy and Environmental Design for Existing Buildings (LEED-EB) Certification**
www.usgbc.org/DisplayPage.aspx?CMSPageID=221
- 8. **Energy Star for existing buildings**
www.energystar.gov/buildings/facility-owners-and-managers/existing-buildings
- 9. **UK Green Building Council – Carbon Reduction**
www.ukgbc.org/resources/publication/uk-gbc-task-group-report-carbon-reduction-existing-non-domestic-buildings
- 10. **US Green Building Council – Leadership in Energy and Environmental Design (LEED) Green Building Rating System**
www.usgbc.org/DisplayPage.aspx?CMSPageID=222